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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/845,566	04/30/2001	Jeffery J. Hanson	S697.12-0051	2220
164	7590	11/06/2003	EXAMINER	
KINNEY & LANGE, P.A. THE KINNEY & LANGE BUILDING 312 SOUTH THIRD STREET MINNEAPOLIS, MN 55415-1002			DEL SOLE, JOSEPH S	
			ART UNIT	PAPER NUMBER
			1722	

DATE MAILED: 11/06/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 09/845,566	<b>Applicant(s)</b> HANSON ET AL.	
	<b>Examiner</b> Joseph S. Del Sole	<b>Art Unit</b> 1722	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 07 October 2003.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-15, 22 and 23 is/are pending in the application.
- 4a) Of the above claim(s) 23 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-5, 11-15 and 22 is/are rejected.
- 7) ☒ Claim(s) 6-10 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                             | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____  |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)         | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____                                    |

**DETAILED ACTION**

***Election/Restrictions***

1. Newly submitted claim 23 is directed to an invention that is independent or distinct from the invention originally claimed for the following reasons:

- I. Claims 1-15 and 22, drawn to an apparatus, classified in class 425, subclass 130.
- II. Claim 23, drawn to a method, classified in class 264, subclass 308.

The inventions are distinct, each from the other because of the following reasons:

2. Inventions II and I are related as process and apparatus for its practice. The inventions are distinct if it can be shown that either: (1) the process as claimed can be practiced by another materially different apparatus or by hand, or (2) the apparatus as claimed can be used to practice another and materially different process. (MPEP § 806.05(e)). In this case the apparatus can be used to practice another and materially different process such as one in which the velocity of the extrusion head is such that the second tip reaches the material deposited by the first tip before the material has cooled so that the second tip shapes the material of the first tip.

3. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

4. Since applicant has received an action on the merits for the originally presented invention, this invention has been constructively elected by original presentation for

prosecution on the merits. Accordingly, claim 23 is withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

5. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

#### ***Claim Objections***

6. Claims 2 and 13 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim.

Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. The thermal diffusivity of the road is a limitation dependent on the material shaped by the apparatus, but does not further limit the apparatus and therefore does not further limit the subject matter of the previous claim. Likewise, the transit time does not further limit because it is dependent on the thermal diffusivity. Therefore, this is a nonstructural process limitation relating to the operation of the apparatus

#### ***Claim Rejections - 35 USC § 102***

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

8. Claims 1-5 and 11 are rejected under 35 U.S.C. 102(b) as being anticipated by Tseng (6,030,199).

Tseng teaches a modeling machine/ extrusion apparatus having a build environment and a first dispenser (Fig 1, the dispenser for #40) carried by an extrusion head (Fig 1, the head having #s 26 and #28) and having an inlet (Fig 1, when #16 is removed it is an inlet) for receiving a first supply of material and a tip (Fig 1, #26) for dispensing roads of material, the tip of the first dispenser having a downward face positioned in approximately a z-plane; a second dispenser (Fig 1, the dispenser for #42) carried by the extrusion head and having an inlet for receiving a second supply of material and a tip for dispensing roads of the second material, the tip of the second dispenser being maintained in a fixed vertical position relative to the tip of the first dispenser (Fig 1), and having a downward face spaced apart a distance from the face of the first dispenser and positioned in approximately the same z-plane as the face of the first dispenser; wherein the distance s at least 0.02 inches and is great enough that a

road deposited by one of the tips will shrink due to cooling during a minimum transit time  $\Delta(t)$  between the tips such that the other one of the tips does not drag across and smear the road (the extent of shrinking, due to thermal diffusivity, along with the transit time are method limitations that do not structurally define the apparatus, the apparatus taught by Tseng has a distance capable of achieving this if operated in an appropriate method); the apparatus is capable of accelerating and decelerating through a path having multiple vertices (Fig 1) and is capable of being accelerated or moved at a velocity such that the spacing of the tips is greater than or equal to the relationship of claim 3 since the relationship is also dependent on the material shaped, which is a method limitation and the selection of a material shaped does not define the structure of the apparatus; the dispensers are thermally conductive (col 4, lines 46-63); a thermally conductive body in which the dispenser are carried (col 4, lines 46-63); a means carried by the body for heating the dispenser to a temperature at which the first and second materials are flowable (Fig 1, #20); each of the dispensers comprise an elongated tubular member that terminates in a common nozzle which carries both tips (Fig 1); and the distance  $s$  is at least 0.02 inches.

The limitations, "which builds three-dimensional objects by depositing thermally solidifiable modeling material as a road of molten material having a height  $h$ "; "having a temperature lower than an extrudate temperature of the material"; "an extrusion heat that moves at a known speed in a predetermined cross-sectional pattern"; and "a first supply of a first thermally solidifiable modeling material in the form of a continuous filament; a second supply of a second thermally solidifiable modeling material, in the

form of a continuous filament,” carries no weight in the apparatus claim because it is drawn to an intended use. Intended use has been continuously held not to be germane to determining the patentability of the apparatus, *In re Finsterwalder*, 168 USPQ 530. Purpose to which apparatus is to be put and expression relating apparatus to contents thereof during intended operation are not significant in determining patentability of an apparatus claim, *Ex parte Thibault*, 164 USPQ 666. Inclusion of the material worked upon by a structure being claimed does not impart patentability to the claims, *In re Otto et al.*, 136 USPQ 458. A recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus satisfying the structural limitation of that claimed, *Ex parte Masham*, 2 USPQ 2d 1647. The manner or method in which a machine is to be utilized is not germane to the issue of patentability of the machine itself, *In re Casey*, 152 USPQ 235.

9. Claims 1-3 and 11 are rejected under 35 U.S.C. 102(e) as being anticipated by Yang et al (6,280,784 B1).

Yang et al teach a modeling machine/ extrusion apparatus having a build environment and a first dispenser (Fig 4, #188A) carried by an extrusion head (Fig 4, #180) and having an inlet (Fig 4, #184A) for receiving a first supply of material and a tip (Fig 4, #186A) for dispensing roads of material, the tip of the first dispenser having a downward face positioned in approximately a z-plane; a second dispenser (Fig 4, #188A) carried by the extrusion head and having an inlet for receiving a second supply of material and a tip, the tip of the second dispenser being maintained in a fixed vertical

position relative to the tip of the first dispenser (Fig 4), and having a downward face spaced apart a distance from the face of the first dispenser and positioned in approximately the same z-plane as the face of the first dispenser; wherein the distance is at least 0.02 inches and is great enough that a road deposited by one of the tips will shrink due to cooling during a minimum transit time  $\Delta(t)$  between the tips such that the other one of the tips does not drag across and smear the road (the extent of shrinking, due to thermal diffusivity, along with the transit time are method limitations that do not structurally define the apparatus, the apparatus taught by Yang et al has a distance capable of achieving this if operated in an appropriate method); the apparatus is capable of accelerating and decelerating through a path having multiple vertices (Fig 1) and is capable of being accelerated or moved at a velocity such that the spacing of the tips is greater than or equal to the relationship of claim 3 since the relationship is also dependent on the material shaped, which is a method limitation and the selection of a material shaped does not define the structure of the apparatus.

The limitations, "which builds three-dimensional objects by depositing thermally solidifiable modeling material as a road of molten material having a height h"; "having a temperature lower than an extrudate temperature of the material"; "an extrusion heat that moves at a known speed in a predetermined cross-sectional pattern"; and "a first supply of a first thermally solidifiable modeling material in the form of a continuous filament; a second supply of a second thermally solidifiable modeling material, in the form of a continuous filament," carries no weight in the apparatus claim because it is drawn to an intended use. Intended use has been continuously held not to be germane



to determining the patentability of the apparatus, *In re Finsterwalder*, 168 USPQ 530. Purpose to which apparatus is to be put and expression relating apparatus to contents thereof during intended operation are not significant in determining patentability of an apparatus claim, *Ex parte Thibault*, 164 USPQ 666. Inclusion of the material worked upon by a structure being claimed does not impart patentability to the claims, *In re Otto et al.*, 136 USPQ 458. A recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus satisfying the structural limitation of that claimed, *Ex parte Masham*, 2 USPQ 2d 1647. The manner or method in which a machine is to be utilized is not germane to the issue of patentability of the machine itself, *In re Casey*, 152 USPQ 235.

***Claim Rejections - 35 USC § 103***

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

2. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

3. Claims 12-15 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over either Tseng (6,030,199) or Yang et al (6,280,784 B1).

Tseng and Yang et al each teach the apparatus as discussed above (only Tseng teaches the common nozzle of claim 22).

Tseng and Yang et al each fail to teach a third dispenser identical to the first and second dispensers and spaced therefrom each.

Regarding claims 12-15, the mere duplication of parts, in this case having a third dispenser identical to the first and second dispensers, has no patentable significance unless new and unexpected results are produced. In re Harza, 124 USPQ 378 (CCPA 1960).

It would have been obvious to one having ordinary skill in the art at the time of the Applicant's invention to have modified the inventions of either Tseng or Yang et al with a third dispenser identical to their first and second dispensers because it enables a composite product to be formed of more than two different materials.

***Allowable Subject Matter***

4. Claims 6-10 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

5. The following is a statement of reasons for the indication of allowable subject matter: the prior art of record fails to teach or suggest a thermally conductive body in which thermally conductive dispensers are carried; a thermal insulator positioned in the body so as to provide thermal separation between the dispensers; a means for heating the first dispenser to a temperature at which the first material is flowable and a means for heating the second dispenser to a temperature at which the second material is flowable in combination with the limitations of the parent claim.

***Response to Arguments***

6. Applicant's arguments with respect to claims 1-15 have been considered but are moot in view of the new ground(s) of rejection.

The Applicant argues that claims 2 and 13 are in proper dependent form because of the amendments to claims 1 and 12, specifically because claims 1 and 2 now claim the modeling material as an element of the apparatus.

The Examiner disagrees. The claimed apparatus is a modeling machine. A modeling machine is an apparatus limitation that can only be limited by structural recitations. Therefore, the amendments to claims 1 and 12 do not successfully incorporate the molded material as an element of the apparatus and claims 2 and 13 still fail to further limit the claims.

The Applicant argues that the rejections of claims 1-15 over (in part) Crump have been overcome.

The Examiner agrees. In part due to the amendments to the claims, all rejections involving Crump have been overcome.

The Applicant argues that Tseng does not meet the limitations of the independent claims because it includes planarizing rollers and because the apparatus of the present invention does not include rollers or any other planarizer.

While the apparatus Tseng does in fact teach rollers, Tseng also teaches all structural limitation claimed. Just because a reference teaches something that is not claimed, does not mean that the reference is inappropriate.

The Applicant argues that the claims emphasize that the deposited roads shrink exclusively due to cooling.

While this may be true, this is not a structural limitation and is controlled by the method in which the apparatus is operated. The limitation does not further limit the apparatus claim.

The Applicant argues that Yang fails to teach velocity acceleration or shrinkage of material, fails to identify smearing of deposited material as a concern and does not disclose whether a second tip passes over a deposited material.

While this may all be true, none of these concerns/limitations are structurally limiting and do not affect the apparatus, they are merely limitations concerning the manner in which the apparatus is run. Since Yang teaches the structural limitations as discussed above, the rejection over Yang is not overcome.

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The Applicant argues that the dispensing apparatus of Yang does not disclose the structural limitation of the utilization of a common nozzle for two dispensers.

The Examiner agrees and the rejection of claims 4, 5 and 22 over Yang is overcome.

### ***Conclusion***

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

### ***Correspondence***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joseph S. Del Sole whose telephone number is (703) 308-6295. The examiner can normally be reached on Monday through Friday from 8:30 A.M. to 5:00 P.M.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ms. Wanda Walker, can be reached at (703) 308-0457. The official fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306 for both non-after finals and for after finals.

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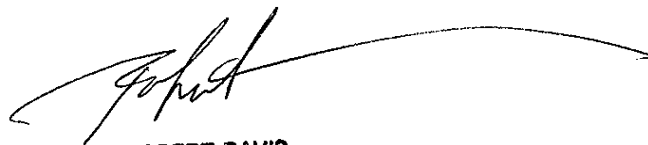
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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

*Joseph S. Lee*

J.S.D.  
October 31, 2003



ROBERT DAVIS  
PRIMARY EXAMINER  
GROUP 1300-1700

*10/31/03*